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EXAMINER	
BATTAGLIA, MICHAEL V	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/628,200	Applicant(s) TAKAHASHI ET AL.	
	Examiner Michael V Battaglia	Art Unit 2652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☒ Claim(s) *1 and 7* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 July 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3,4,6.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the hologram element having a first and diffraction grating on a surface of said element and a second diffraction grating on an opposite surface thereof must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

3. The drawings are objected to because of the following informalities:

a. In Fig. 2C, the current-to-voltage converted and amplified outputs of the beam receiving regions s109a+c, s109b, and s110a-h are all connected to each other and to both inputs of the differential amplifiers 121-123. This does not match the equations describing the outputs of the differential amplifiers given on page 6, lines 19-20 and page 7, lines 8-9 and 17-18.

b. In Fig. 3C, the current-to-voltage converted and amplified outputs of the beam receiving regions s133a-f are all connected to each other and to both inputs of the differential amplifiers 141-143. This does not match the equations describing the outputs of the differential amplifiers given on page 12, lines 8 and 20-21 and page 13, lines 5-6.

c. In Fig. 5C, the current-to-voltage converted and amplified outputs of the beam receiving regions s14a+s14c, s15b, s15c, s15e, and s15f are all connected to each other and

to both inputs of the differential amplifiers 18 and 19. This does not match the equations describing the outputs of the differential amplifiers given on page 30, line 24 and page 31, line 9.

d. In Fig. 6, the examiner suggests changing the labels "s15bc" and "s15b" to -s14bc- and -s15a- respectively, labeling the current-to-voltage converted and amplified output of the beam receiving region 15b as -s15b-, and changing the arrow from label "s15c" to point to the current-to-voltage converted and amplified output of the beam receiving region 15c.

e. In Fig. 6, the current-to-voltage converted and amplified outputs of the beam receiving regions 14A and 15 are all connected to each other and to both inputs of the differential amplifiers 17-19. This does not match the equations describing the outputs of the differential amplifiers given on page 34, lines 21-22 and page 35, lines 4-5 and 11-12.

f. In Fig. 8C, the current-to-voltage converted and amplified outputs of the beam receiving regions s30a-d are all connected to each other and to both inputs of the differential amplifiers 18 and 19. This does not match the equations describing the outputs of the differential amplifiers given on page 41, line 18 and page 42, line 2.

g. In Fig. 9D, the current-to-voltage converted and amplified outputs of the beam receiving regions s42d+s43a, s42c+s43b, s42a+s43d, and s42b+s43c are all connected to each other and to both inputs of the differential amplifiers 45 and 46. This does not match the equations describing the outputs of the differential amplifiers given on page 46, lines 22-23 and page 47, lines 7-8.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

5. The disclosure is objected to because of the following informalities:

a. On page 20, the examiner suggests removing "at least".

b. On page 36, line 1, the examiner suggests replacing "head" with -heat-.

Appropriate correction is required.

Claim Objections

6. Claims 1 and 7 are objected to because of the following informalities:

a. On line 9 of claim 1, the examiner suggests replacing "lease" with -least-.

b. On line 2 of claim 7, the examiner suggests replacing "dissipate" with -dissipating-.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Katayama (US 5,570,333).

In regard to claim 1, Katayama discloses an optical head comprising: (a) a light source for emitting a light beam to be irradiated to an optical recording medium as an incident light beam (Figs. 7 and 9; element 5); (b) a hologram element for receiving a reflected light beam, generated by reflection of said incident light beam on said medium to generate at least two diffracted light beams for focusing error detection and at least two diffracted light beams for tracking error detection (Fig. 7, element 49 and Fig. 8); and (c) an optical detector for detecting the at least two diffracted light beams for focusing error detection and the at least two diffracted light beams for tracking error detection (Figs. 7 and 9, elements 50-51); said detector including a first receiving surface for receiving the at least two diffracted light beams for focusing error detection (Fig. 9, elements 58-61) and a second detection surface for receiving the at least two diffracted light beams for tracking error detection (Fig. 9, elements 62-63); each of said first and second receiving surfaces being divided into receiving regions; the at least two diffracted light beams for focusing error detection being received at said receiving regions of said first receiving surface; the at least two diffracted light beams for tracking error detection being received at said receiving regions of said second receiving surface (Fig. 7; Fig. 9, elements 58-63; and Col. 9, lines 10-22).

In regard to claim 2, Katayama discloses that said hologram element has a property of selectively exhibiting a diffraction grating function according to a polarization direction of said reflected light beam (Col. 8, lines 30-33).

In regard to claim 3, Katayama discloses that said hologram element has diffraction gratings divided by at least one division line, and said gratings have different grating patterns; and wherein

the at least two diffracted light beams for focusing error detection and the at least two diffracted light beams for tracking error detection are generated by said gratings of said element (Fig. 8).

In regard to claim 8, Katayama discloses an optical head comprising: (a) a light source for emitting a light beam to be irradiated to an optical recording medium as an incident light beam (Figs. 7 and 9; element 5); (b) a hologram element including gratings divided by at least one division line, said gratings having different patterns; said element receiving a reflected light beam generated by reflection of said incident light beam on said medium, thereby generating at least two diffracted light beams for focusing error detection and at least two diffracted light beams for tracking error detection by using said gratings (Fig. 7, element 49 and Fig. 8); (c) an optical detector for detecting the at lease two diffracted light beams for focusing error detection and the at least two diffracted light beams for tracking error detection (Figs. 7 and 9, elements 50-51); said detector including a first receiving surface for receiving the at least two diffracted light beams for focusing error detection (Fig. 9, elements 58-61) and a second detection surface for receiving the at least two diffracted light beams for tracking error detection (Fig. 9, elements 62-63); each of said first and second receiving surfaces being divided into receiving regions; the at least two diffracted light beams for focusing error detection being received at said receiving regions of said first receiving surface; the at least two diffracted light beams for tracking error detection being received at said receiving regions of said second receiving surface (Fig. 7; Fig. 9, elements 58-63; and Col. 9, lines 10-22).

8. Claims 1-4, 8, and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Maeda et al (hereafter Maeda) (US 5,956,302).

In regard to claim 1, Maeda discloses an optical head comprising: (a) a light source for emitting a light beam to be irradiated to an optical recording medium as an incident light beam

(Figs. 2, 5, and 11; element 5); (b) a hologram element for receiving a reflected light beam, generated by reflection of said incident light beam on said medium to generate at least two diffracted light beams for focusing error detection and at least two diffracted light beams for tracking error detection (Figs. 1-3, 5, and 11; element 7); and (c) an optical detector for detecting the at least two diffracted light beams for focusing error detection and the at least two diffracted light beams for tracking error detection (Fig. 5, element PD and Fig. 11, elements S1-S6); said detector incl udlng a first receiving surface for receiving the at least two diffracted light beams for focusing error detection (Fig. 11, elements S1-S4) and a second detection surface for receiving the at least two diffracted light beams for tracking error detection (Fig. 11, elements S5-S6); each of said first and second receiving surfaces being divided into receiving regions; the at least two diffracted light beams for focusing error detection being received at said receiving regions of said first receiving surface; the at least two diffracted light beams for tracking error detection being received at said receiving regions of said second receiving surface (Fig. 11, elements S1-S6 and Col. 16, lines 6-24).

In regard to claim 2, Maeda discloses that said hologram element has a property of selectively exhibiting a diffraction grating function according to a polarization direction of said reflected light beam (Figs. 1 and 2).

In regard to claim 3, Maeda discloses that said hologram element has diffraction gratings divided by at least one division line, and said gratings have different grating patterns; and wherein the at least two diffracted light beams for focusing error detection and the at least two diffracted light beams for tracking error detection are generated by said gratings of said element (Fig. 5, element 7).

In regard to claim 4, Maeda discloses that said hologram element has a first diffraction grating on a surface of said element and a second diffraction grating on an opposite surface thereof (Figs. 1-3, element 7).

In regard to claim 8, Maeda discloses an optical head comprising: (a) a light source for emitting a light beam to be irradiated to an optical recording medium as an incident light beam (Figs. 2, 5, and 11; element 5); (b) a hologram element including gratings divided by at least one division line, said gratings having different patterns; said element receiving a reflected light beam generated by reflection of said incident light beam on said medium, thereby generating at least two diffracted light beams for focusing error detection and at least two diffracted light beams for tracking error detection by using said gratings (Figs. 1-3, 5, and 11; element 7); (c) an optical detector for detecting the at lease two diffracted light beams for focusing error detection and the at least two diffracted light beams for tracking error detection (Fig. 5, element PD and Fig. 11, elements S1-S6); said detector including a first receiving surface for receiving the at least two diffracted light beams for focusing error detection (Fig. 11, elements S1-S4) and a second detection surface for receiving the at least two diffracted light beams for tracking error detection (Fig. 11, elements S5-S6); each of said first and second receiving surfaces being divided into receiving regions; the at least two diffracted light beams for focusing error detection being received at said receiving regions of said first receiving surface; the at least two diffracted light beams for tracking error detection being received at said receiving regions of said second receiving surface (Fig. 11, elements S1-S6 and Col. 16, lines 6-24).

In regard to claim 12, Maeda discloses an optical head comprising: (a) a light source for emitting a light beam to be irradiated to an optical recording medium as an incident light beam (Figs. 2, 5, and 11; element 5); (b) a hologram element including a first diffraction grating on a

surface of said element and a second diffraction grating on an opposite surface thereof, said first and second gratings having different patterns; said element receiving a reflected light beam generated by reflection of said incident light beam on said medium, thereby generating at least two diffracted light beams for focusing error detection and at least two diffracted light beams fox tracking error detection by using said first and second gratings (Figs. 1-3, *5*, and 11; element 7); (c) an optical detector for detecting the at lease two diffracted light beams for focusing error detection and the at least two diffracted light beams for tracking error detection (Fig. *5*, element PD and Fig. 11, elements S1-S6); said detector including a first receiving surface for receiving the at least two diffracted light beams for focusing error detection (Fig. 11, elements S1-S4) and a second detection surface for receiving the at least two diffracted light beams for tracking error detection (Fig. 11, elements S5-S6); each of said first and second receiving surfaces being divided into receiving regions; the at least two diffracted light beams for focusing error detection being received at said receiving regions of said first receiving surface; the at least two diffracted light beams for tracking error detection being received at said receiving regions of said second receiving surface (Fig. 11, elements S1-S6 and Col. 16, lines 6-24).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katayama in view of Fukakusa et al (hereafter Fukakusa) (US 5,687,155).

Katayama discloses an optical head as claimed in claim 1 that has a package containing the light source and optical detector (Fig. 11, element 82). Katayama does not disclose that the package has a positioning mechanism, wherein said package is mounted on a base using said positioning mechanism (claim 5); that the base has a hole into which the package is inserted (claim 6); and that the optical head further comprises a heat dissipation member (claim 7).

In regard to claim 5, Fukakusa discloses an optical head having at least a light source and an optical detector located in a package having a positioning mechanism; wherein said package is mounted on a base using said positioning mechanism (Fig. 7 and Col. 8, lines 15-47). The examiner interprets the optical member (Figs. 2 and 7, element 10) having the light source (Fig. 2 and 7, element 1) and optical detectors (Fig. 2, elements 2a-2d and 3a-3d and Col. 8, lines 23-24) as the package, the bobbin (Fig. 7, element 60) as the base, and the fixing parts of the optical member and bobbin (Fig. 7, elements 17 and 61 and Col. 8, lines 38-39) as the positioning mechanism.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to mount the package of Katayama onto the base of Fukakusa using the positioning mechanism of Fukakusa, the motivation being to fit the package into a fixed position.

In regard to claim 6, Fukakusa discloses that the base has a hole into which said package is inserted; and wherein an inner wall of said hole is substantially equal in shape and size to an outer wall of said package; wherein said inner wall of said hole has an engaging part and said outer wall of said package has a corresponding engaging part; and wherein said package is positioned at a desired location with respect to said base by engagement between said engaging parts of said hole

and said package (Fig. 7 and Col. 8, lines 15-47). The examiner interprets the bobbin fixing part (Fig. 7, element 61) as the engaging part of the inner wall of the hole in the base and the optical member fixing part (Fig. 7, element 17) as the engaging part of the outer wall of the package. In addition, Fukakusa teaches that by fitting the package into the hole in the base, the light source can be sealed off from the atmosphere, which improves reliability by reducing the risk of shortening the life or breakdown of the light source due to steam or corrosive gas contained in the atmosphere (Col. 8, lines 38-47).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert the package of Katayama into a hole in the base; wherein an inner wall of said hole is substantially equal in shape and size to an outer wall of said package; and wherein said inner wall of said hole has an engaging part and said outer wall of said package has a corresponding engaging part; and wherein said package is positioned at a desired location with respect to said base by engagement between said engaging parts of said hole and said package as suggested by Fukakusa, the motivation being to fit the package into a fixed position while sealing off the light source from the atmosphere, thereby improving reliability by reducing the risk of shortening the life or breakdown of the light source due to steam or corrosive gas contained in the atmosphere.

In regard to claim 7, Fukukusa discloses that the optical head further comprises a heat dissipation member for dissipating heat generated by said light source (Fig. 7, element 18).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include in the optical head of Katayama a heat dissipation member for dissipating heat generated by said light source as suggested by Fukakusa, the motivation being to dissipate heat generated by the light source.

10. Claims 9-11 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda in view of Fukakusa.

Maeda discloses an optical head as claimed in claims 8 and 12 that has a package containing the light source and optical detector and made of plastic (Fig. 15, element 17 and Col. 24, lines 38-40). Maeda does not disclose that the package has a positioning mechanism, wherein said package is mounted on a base using said positioning mechanism (claims 9 and 13); that the base has a hole into which the package is inserted (claims 10 and 14); and that the optical head further comprises a heat dissipation member (claims 11 and 15).

In regard to claims 9 and 13, Fukakusa discloses an optical head having at least a light source and an optical detector located in a package having a positioning mechanism; wherein said package is mounted on a base using said positioning mechanism (Fig. 7 and Col. 8, lines 15-47). The examiner interprets the optical member (Figs. 2 and 7, element 10) having the light source (Fig. 2 and 7, element 1) and optical detectors (Fig. 2, elements 2a-2d and 3a-3d and Col. 8, lines 23-24) as the package, the bobbin (Fig. 7, element 60) as the base, and the fixing parts of the optical member and bobbin (Fig. 7, elements 17 and 61 and Col. 8, lines 38-39) as the positioning mechanism.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to mount the plastic package of Maeda onto the base of Fukakusa using the positioning mechanism of Fukakusa, the motivation being to fit the package into a fixed position.

In regard to claims 10 and 14, Fukakusa discloses that the base has a hole into which said package is inserted; and wherein an inner wall of said hole is substantially equal in shape and size to an outer wall of said package; wherein said inner wall of said hole has an engaging part and said outer wall of said package has a corresponding engaging part; and wherein said package is

positioned at a desired location with respect to said base by engagement between said engaging parts of said hole and said package (Fig. 7 and Col. 8, lines 15-47). The examiner interprets the bobbin fixing part (Fig. 7, element 61) as the engaging part of the inner wall of the hole in the base and the optical member fixing part (Fig. 7, element 17) as the engaging part of the outer wall of the package. In addition, Fukakusa teaches that by fitting the package into the hole in the base, the light source can be sealed off from the atmosphere, which improves reliability by reducing the risk of shortening the life or breakdown of the light source due to steam or corrosive gas contained in the atmosphere (Col. 8, lines 38-47).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert the plastic package of Maeda into a hole in the base; wherein an inner wall of said hole is substantially equal in shape and size to an outer wall of said package; and wherein said inner wall of said hole has an engaging part and said outer wall of said package has a corresponding engaging part; and wherein said package is positioned at a desired location with respect to said base by engagement between said engaging parts of said hole and said package as suggested by Fukakusa, the motivation being to fit the package into a fixed position while sealing off the light source from the atmosphere, thereby reducing the risk of shortening the life or breakdown of the light source due to steam or corrosive gas contained in the atmosphere.

In regard to claims 11 and 15, Fukukusa discloses that the optical head further comprises a heat dissipation member for dissipating heat generated by said light source (Fig. 7, element 18).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include in the optical head of Maeda a heat dissipation member for dissipating heat generated by said light source as suggested by Fukakusa, the motivation being to dissipate heat generated by the light source.

Citation of Relevant Prior Art

11. Kiely et al (US 5,953,355) discloses a plastic resin housing for a light source and light detector package (Abstract). Lebby et al (US 5,905,750) discloses a plastic package with a heat dissipation member (Fig. 4). Ono et al (US 5,659,531) discloses a light source and light detector package and a holographic diffracting element for diffracting beams for focus error detection and beams for tracking error detection with different gratings divided by a division line (Figs. 12A, 12B, and 17). Nakao et al (US 6,272,097) discloses a photo detector integrated on a substrate with a light source and a holographic diffracting element for diffracting beams for focus error detection and beams for tracking error detection with different gratings divided by a division line (Figs. 1 and 2). Takeda et al discloses a light source and light detector package that is fitted into and defined by a hole in a base with a positioning mechanism (Figs. 10-12; Col. 5, line 65 - Col. 6, line 4; and Col. 11, lines 16-22).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V Battaglia whose telephone number is (703) 305-4534. The examiner can normally be reached on 5-4/9 Plan with 1st Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Michael Battaglia

Michael Battaglia

BRIAN E. MILLER
PRIMARY EXAMINER